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► Maximizing Canadian oil production and exports over the medium-term could help reduce CO2 emissions for the long-term

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December 4, 2024

► Introduction

There is a chasm of disagreement separating climate-concerned policy makers in Ottawa and supporters of the oil and gas sector on the prairies. Each side behaves like they're playing a zero-sum game. One can support the environment or oil production but not both—one side has to lose. Yet, there is a growing minority of finance and investment analysts who think they've found a way to change that equation. They argue a win-win strategy is gaining traction which holds that maximizing Canadian oil and gas production and exports over the medium-term can contribute to reducing CO2 emissions in Canada over the long-term. We might refer to this as the production maximization strategy—or maximization for short.

Admittedly, proponents of maximization face an uphill battle. Their opponents in the environmental movement and federal government claim it sounds like a “drink your way to sobriety” delusion. Nevertheless, a reasonable case can be made for the claim that Canada can

simultaneously expand oil and gas production and make progress toward net zero emissions. It helps that there is at least one real life example of the strategy that is actually working.

Supporters of maximization have used Norway's petroleum, gas and green energy transition policy mix to illustrate the concept. Norway uses fossil fuel revenues to finance its green energy transition.

A 2023 report by National Bank Financial Markets (NBFM), a Montreal-based financial consultancy, describes how Norway has used oil and gas revenues to build a sovereign wealth fund worth \$1.3 trillion USD. In 2022 alone, Norway's natural gas and oil exports totaled \$161 billion USD. The NBFM report explains that access to revenue on this scale has allowed Norway to, “massively finance its transition to green energy.” Case in point: in 2022 the Norwegian government provided every citizen who purchased a new electric vehicle with a whopping \$25,000 USD subsidy. Eighty percent of new vehicles sold in Norway in 2022 were either full electric or hybrids.

In addition to supporting its efforts to electrify transportation, Norway’s resource wealth has allowed it to obtain carbon offset credits from the European Union Emissions Trading System. Norway has also made significant investments in domestic and international tree planting and reforestation programs.

»» The Norway Model

The NBFM report contends that Canada could do well adopting the Norwegian model. Morningstar, a US headquartered financial services firm, has also studied Norway’s system and agrees. Stephen Ellis, Morningstar’s Energy Strategist, has similarly recommended Canada consider adopting Norway’s system of maximizing oil and gas revenues in support of its green transition. Ellis says that compared with our currently deficient suite of climate change and energy transition policies, “It would certainly be a more thoughtful model for the Canadian government to adopt.”

Norway has had considerable success reducing its domestic greenhouse gas (GHG) emissions. Climate Watch, an organization that assesses the performance of 63 countries for limiting GHG emissions, renewable energy development and climate change policies, ranked Norway as the world’s 8th most effective country in those three areas for 2022. Canada consistently ranks low in the bottom half.

Ironically, despite Norway’s progress in combating GHG emissions, it is currently the world’s eighth biggest oil exporter; though its ability to sustain current levels of production is under threat. Older North Sea fields like the Brent have played out and production in others is declining. If new offshore oil fields aren’t developed the flow of oil for export could be reduced to a relative trickle in less than two decades.

The CEOs of Norway’s two biggest oil companies, Aker BP (a publicly traded company) and Equinor ASA (67% state owned) have cautioned that without significantly increasing oil production, Norway will have trouble financing green transition initiatives and adhering to its domestic emissions reduction timetable. To sustain export revenues, Aker BP and Equinor ASA have committed to spending \$19 billion USD to develop a series of fields in the North and Norwegian Seas.

If large petroleum reserves and big oil export revenues are all that’s required to finance a successful green energy transition, Canada should be leaving Norway in the dust. Canada exports more than twice as much oil as Norway (but less natural gas). Our petroleum producers pumped \$139 billion CAD worth of crude oil into international markets in 2022, making this country the world’s third largest petroleum exporter. Canadian natural gas exports earned only \$13 billion CAD in 2023. But, with large new liquified natural gas facilities coming on stream, the value of gas exports is poised to increase.

Canada ranks fourth in the world for proven oil reserves with more than 160 billion barrels still in the ground and available for development – estimated to be enough to allow for another 90 years

of production. Norway ranks 41st in the world. As of 2022 it had just 8 billion barrels of proven oil reserves, which is estimated to be enough to last just another 12 years – hence the urgency in getting new offshore oil fields into production.

»» Oil Exports key to Canadian economy

The contribution of oil to the Canadian economy is massive. Crude oil is Canada’s single most valuable export product, averaging 14.34% of Canada’s total exports over the past 14 years (2010-2022). On average, oil exports contributed 4.7% annually to GDP from 2014-2022. Approximately 85% of Canada’s oil exports come from Alberta and about 80% of that oil is diluted bitumen (dilbit) from Alberta’s oil sands. The Canadian Association of Petroleum Producers (CAPP) estimates that in 2022, a record high of \$34 billion in royalties and fees were collected by Canada’s oil and gas producing provinces. Moreover, aside from being crucial to supporting the value of the Canadian dollar, our energy exports more than cover Canada’s costs of importing goods and services.

YEAR	OIL EXPORTS BPD	VALUE OF OIL EXPORTS CAD	EXPORT VALUE ALL PRODUCTS CAD	OIL % SHARE OF ALL EXPORTS	CANADA'S GDP	OIL EXPORT % SHARE GDP
2010	2.599 MN	49.907 BN	403.967 BN	12.4%	1,451.78 BN	3.4%
2011	2.798 MN	68.526 BN		15.0%	1,482.09 BN	4.6%
2012	3.056 MN	71.672 BN	461.511 BN	15.5%	1,506.72 BN	4.8%
2013	3.296 MN	81.498 BN	479.225 BN	17.0%	1,533.01 BN	5.3%
2014	3.536 MN	92.600 BN	529.333 BN	17.5%	1,564.60 BN	5.9%
2015	3.837 MN	55.713 BN	524.046 BN	10.6%	1,597.46 BN	3.5%
2016	3.889 MN	48.210 BN	522.301 BN	9.2%	1,630.66 BN	3.0%
2017	4.233 MN	63.469 BN	550.525 BN	11.5%	1,684.25 BN	3.9%
2018	4.494 MN	78.423 BN	587.511 BN	13.3%	1,731.24 BN	4.5%
2019	4.667 MN	84.303 BN	598.166 BN	14.1%	1,756.73 BN	4.8%
2020	4.398 MN	51.000 BN	522.394 BN	9.8%	1,683.76 BN	3.0%
2021	4.656 MN	81.939 BN	636.284 BN	12.9%	1,773.28 BN	4.6%
2022	4.679 MN	188.000 BN	779.290 BN	24%	2,138.00 BN	8.8%
2023	4.836 MN	139.000 BN	768.200 BN	18%	2,478.00 BN	5.6%
Totals		1.154 TRN				
Averages				14.34%		4.7%

The table above presents data illustrating the economic significance of Canada’s petroleum exports and supports other information and analysis presented in the article.

Due in large part to its oil wealth, Alberta contributes more in taxes to Ottawa than it receives in federal transfer payments. A September 2024 study published by the Fraser Institute estimates that from 2007 to 2022, Alberta contributed \$244.6 billion more to Ottawa in taxes and other payments than it received in federal transfers. In 2022 alone, “Alberta contributed \$14.2 billion more into the federal revenue pool than it received back in federal spending.” CAPP claims that if Alberta made no more than the average provincial contribution to federal government revenues for 2022, Ottawa would have had an additional \$16 billion hole in its budget.

None of Canada’s non-renewable resource royalties or taxes are earmarked by governments for specific purposes. Those revenues become part of the provincial and federal governments’ general revenue pools to be used for all and sundry government expenditures. This was not always the case. In Alberta, from 1976 to 1987, the provincial government was required to annually deposit a mandated percentage of its non-renewable resource revenues into the province’s Heritage Savings Trust Fund. Saskatchewan established a similar fund for banking a portion of its resource revenues in the 1970s. The Alberta fund still exists, but the government is no longer required to deposit a prescribed portion of its resource revenues. Saskatchewan’s heritage fund was eliminated by a cash-strapped Progressive Conservative government in the 1980s.

Under current practice, if maximization resulted in an increase in oil and gas royalty and tax revenues, the new revenues would become part of governments’ general revenue pools. But that does not have to be the case. Governments could determine all or a portion of tax and royalty revenues earned on increased production and exports facilitated by new pipelines must be devoted to green energy transition initiatives and GHG mitigation. Climate change adaptation efforts might be included as well. The amount of money available from such a fund could potentially be quite large. Ideally, the progress made through investments in research and low emissions energy systems would reduce the need to tax consumers directly.

»» Green Energy Fund

Policy makers could establish a green energy transition fund based on the pre-1987 Alberta Heritage Fund model. Norway borrowed ideas from Alberta when it set up its celebrated sovereign wealth fund and things have worked well for them. The enabling legislation for a Canadian green transition fund could specify the types of low emissions investments fund managers could make. Admittedly, convincing the producing provinces to contribute a portion of their constitutionally protected revenue streams could be a significant challenge. However, assurances that exports would expand well beyond current levels might be considered an acceptable compromise.

Ideally, the green transition fund would provide a significant portion of the capital required to realize Canada’s climate change goals. Furthermore, the intergovernmental negotiations and stakeholder consultations required to establish the fund have the potential to generate a meaningful national commitment to emissions reduction efforts designed to meet the unique conditions and requirements of each region of the country. The fund could support the research efforts and consultations required to ensure optimal emission reducing pathways are selected for investment. Indeed, several provinces have already identified and invested in emissions reduction strategies they deem locally appropriate.

While it is presumptuous to specify what sorts of investments the transition fund might support, some pathways have already been embraced globally and here in Canada. The development of low emissions electrical power generation and transportation have emerged as two of the most widely supported approaches. Clearly, there are many low emissions technologies available to support these developments—some of which are better suited to particular regions of Canada than others. All of them: hydro, solar, wind, geothermal, biomass, carbon sequestration, nuclear, etc. require significant capital investment. The fund may not be able to provide all of the financial resources required for a successful green transition. But it could certainly complement and support the public and private sources of investment which have financed the progress made to date in these areas.

Some of Norway’s solutions may prove adaptable to Canadian conditions. For example, Canada might see value in participating in international emissions trading markets or undertaking ambitious tree planting and reforestation programs. The electrification of transportation is another area where Canada could emulate Norway’s success. Its vehicle electrification investments have been tailored to suit different climate conditions and the needs of sparsely populated rural regions with long distances separating communities.

The financial resources available to a green transition fund could be substantial. Just how substantial will depend on the tax sharing agreements made between key stakeholders. If, for example, maximization allowed for the development of one million barrels per day in new non-US Canadian oil export capacity, an amount roughly equivalent to two Trans Mountain expansions, it could generate up to \$48 billion in annual revenues at today’s oil prices. Earmarking a significant portion of the new royalty and tax revenues could allow for annual transition fund deposits worth several billion. The transition fund could become an important source of investment capital in a few years.

In a nutshell, maximization combined with a green transition fund could provide a large and relatively predictable flow of capital for the advancement of Canada’s green transition. At the same time, it offers the producing provinces revenue and employment opportunities that cannot be achieved under the existing policy framework. An additional benefit is that the funds drawn on new revenues do not compete with governments’ preexisting financial commitments and reduce the need to tax consumers.

►► The Barriers to Export Growth

Notwithstanding Canada's large reserves of oil and the importance of oil and gas to the Canadian economy, employment and government revenue streams, efforts to increase production and exports have been constrained by a collection of federal government policies linked to environmental protection and climate change mitigation. The principal barrier has been the effect of those policies on building new oil export pipelines from the prairies to tidewater terminals in Canada.

Following the election of the Liberal government in October 2015, federal policy related to fossil fuel production reflected many of the goals of the international environmental movement. The environmental lobby waged a well-financed, politically influential anti-Alberta oil campaign from the mid-2000s until shortly after the Biden administration cancelled the Keystone XL pipeline in 2021.

“A central complaint of environmentalists about the oil sands is that more energy is required to extract, transport and process oil sands bitumen than is the case for conventional, lighter types of crude oil.”

A central complaint of environmentalists about the oil sands is that more energy is required to extract, transport and process oil sands bitumen than is the case for conventional, lighter types of crude oil. This means more CO₂ emissions are produced than when extracting and processing conventional crude. However, that criticism is arguably less valid today than it was a decade ago.

Over the past several years oil sands producers have claimed success in reducing the energy they consume and emissions they produce. Currently, the Pathways Alliance, a consortium of six oil sands producers, has investment plans on the drawing board for a huge regional carbon capture and sequestration project. Should this or similar projects go ahead, the industry's domestic CO₂ footprint could be significantly reduced. Unfortunately, information regarding progress on such initiatives has become scarce in the wake of federal legislation limiting speech with respect to the promotion of environmentally beneficial oil industry projects.

Legislation supporting Ottawa's constraints on oil production and exports includes the Byzantine environmental approval process for new pipelines contained in the Impact Assessment Act and Canadian

Energy Regulator Act (originally Bill C-69). Another pipeline-killing piece of legislation is the Oil Tanker Moratorium Act (originally Bill C-48) which bans oil tanker traffic on British Columbia's northern coast.

In the fall of 2015, the federal government announced its intention to enact the tanker ban and Bill C-69, plus preliminary changes to the pipeline approval process—changes which, alarmed pipeline proponents. Additionally, frustrating were threats of court challenges on the part of environmentalists, First Nations groups and municipalities. There was potential for court injunctions halting construction, threatening cost overruns, and outright cancellation of projects. A combination of these challenges contributed to the cancellation of Enbridge's Northern Gateway pipeline in 2016 and Trans Canada's decision to abandon the Energy East pipeline project in 2017.

Trans Canada became understandably exasperated dealing with the government's approval processes. In fact, similar regulatory approval challenges and litigation were affecting pipeline builders in both Canada and the US. The Obama administration's cancellation of Trans Canada's Keystone XL pipeline in November 2015 followed the same sorts of environmental protests and court challenges pipeline proponents were dealing with in Canada. The delays caused by regulatory red tape and stakeholder opposition cost investors billions and were not resulting in completed projects. The straw that finally broke the back of Energy East was strident opposition from the Montreal Area Municipal Community, an association of 82 municipalities led by Montreal mayor and former Liberal federal cabinet minister, Denis Coderre.

The Trans Mountain pipeline expansion was similarly plagued by regulatory red tape and delays, as well as protests and litigation by First Nations, environmental groups and at least one municipal government. Kinder Morgan, the pipeline's owner and expansion proponent had become concerned enough about barriers to timely completion of the line to sell it to the federal government for \$4.5 billion in 2018 (Kinder Morgan had launched the project in 2013). Some observers contend the Trans Mountain expansion was the consolation prize offered to make up for the cancellation of Northern Gateway and Energy East and the Trudeau government's tepid response to the Obama administrations' cancellation of the Keystone XL.

Between 2018 and completion of the Trans Mountain project in mid-2024 the federal government faced the consequences of the project approval process it was largely responsible for creating (the courts also played a role by virtue of their expansive interpretations of the need to consult First Nations). Kinder Morgan's estimate for completing the project when the government purchased the existing pipeline was \$5.4 billion. The delays caused by court injunctions and overly zealous environmental regulations cost a fortune. The final bill came to \$34 billion—over six times more than the original estimate.

The development of new non-US export opportunities is attractive because it would increase the per barrel prices available to Canadian oil producers. US refiners charge transportation and refining discounts against Canadian dilbit. The discounts averaged 26.3% during the 2015-2022 period. Frequently as much as half the discount is due to excessive charges arising from advantages US buyers derive from being our sole export customers. Access to new export terminals on Canadian tidewater will give prairie oil producers access to an assortment of new international customers and can be expected to involve much lower discounts—in the range of 15-20 percent. If the maximization strategy envisioned in this article was in place, a portion of the resulting increase in per barrel revenues would be available for climate change mitigation efforts.

Assuming the Trans Mountain, Northern Gateway and Energy East pipelines had been up and running at full capacity from 2015 through to 2022, approximately \$292 billion in additional export revenues would have been earned. The revenue estimate includes the benefit of having lower discounts charged against Canadian diluted bitumen (dilbit) in international markets than is currently the case in the US which accounts for 96% of Canada's crude oil exports). The additional export revenues under this scenario amount to a 48% increase over actual export earnings during the period. The size of lost revenues would have been even higher if world oil prices had been higher — closer to what they were just prior to and following the 2014-2021 global oil price decline. If Canada's federal and provincial governments decided to devote a significant portion of the additional tax and royalty revenues generated by new tidewater pipelines to green transition initiatives, our GHG emissions profile could start to look a lot more like Norway's.

The table provided in the Annex is an assessment of oil price and production levels, which supports the estimation scenarios presented in the paper.

Many potential investors in Canada's pipeline sector have been reluctant to put money into new export-related projects following the spate of project cancellations between 2016 and 2021. It is noteworthy that despite those cancellations Canada's oil producers have still been able to increase production and exports. From 2010 to 2023, Canadian oil production grew each year except for 2020 the worst of the COVID-19 years. Exports increased from 2.6 million barrels per day in 2010 to 4.8 million barrels per day in 2023 – an 85% increase.

Several factors facilitated the increase in production and exports. At least two major pipelines to the US were approved by the Conservative government prior to 2015. After 2015 exports were further facilitated by the construction of links between existing lines running from Canada to the US and within the US which accommodated more Canadian oil. In addition, new technologies have been adopted that allow for higher flows on existing pipelines and more oil has been moving by rail. However, these sorts of solutions are limited. For example, the new export capacity offered by the Trans Mountain expansion will likely be exceeded in five to ten years.



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Supporters of the oil and gas sector understand the window of opportunity for maximizing exports and revenues won't be open forever. There is a reasonable likelihood that at some point this century an effective green energy transition will actually be underway and that global demand for oil and natural gas will decline accordingly. When this occurs, there is a chance a portion of Canada's proven oil reserves will never be developed. The sooner new export pipelines can be built, the greater the likelihood that more of Canada's reserves can be produced and sold, generating wealth for investment in green energy.

A key consideration is policy coordination. There is significant risk of public backlash if safe, reliable and affordable low emission sources of energy do not come on stream in time frames aligned with mandated declines in fossil fuel production and consumption. Insufficient energy supplies will adversely impact households and industry, with economically ruinous consequences. Furthermore, energy supply disruptions are hazardous to human health and safety; especially under extreme weather conditions such as heat waves and cold snaps.

Before any more oil export pipelines and port facilities are built in Canada, investors will require assurances that the approval process will be far less onerous, more predictable and much more expeditious than has been the case under the Impact Assessment Act and Energy Regulator Act. In addition, there would have to be guarantees in place to ensure new pipelines are licensed to operate for a reasonable period of time. No one will invest if there is no hope of recovering development and construction costs and receiving a decent return on their investments. Most petroleum industry analysts agree that the barriers to maximization in Canada are largely regulatory and have little or nothing to do with decreasing global demand for oil between today and 2050.

Oil and Gas Demand is Not Going Away Soon

Notwithstanding the pledges made at international climate conferences to reduce fossil fuel consumption in support of achieving net zero CO2 emissions by 2050, a number of influential organizations claim global petroleum consumption will increase, or at least remain stable at around 100 million barrels per day, between now and 2050.

The US Energy Information Administration (EIA) projects a 50% increase in global energy consumption between 2024 and 2050. While the EIA predicts strong growth in the consumption of energy supplied by renewables, petroleum will still be the world's most significant energy source in 2050. The graph provided below presents the US EIA's projections for energy demand by type from 2020 to 2050.

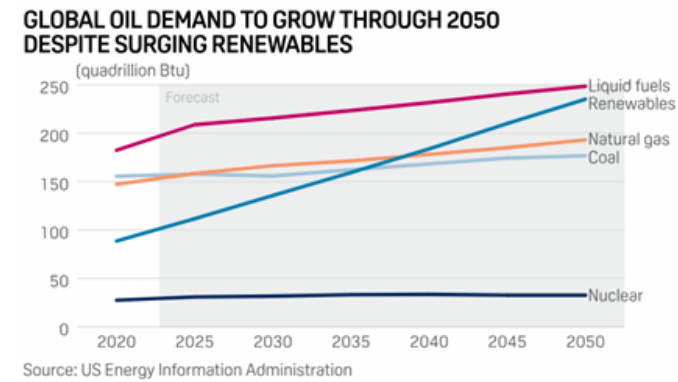


IMAGE COURTESY: ENERGY NOW MEDIA, OCTOBER 25, 2024 <https://energynow.ca/2024/10/global-energy-consumption-forecasting-in-the-age-of-climate-change-yogi-schulz>

OPEC analysts have recently predicted oil production and consumption will rise to 118.9 million bpd by 2045 and hit 120.1 million bpd by 2050. The Paris-based International Energy Agency (IEA) expects petroleum demand to peak in 2029 at 105.6 million bpd. OPEC on the other hand is betting that by 2028 demand will have increased to 111 million bpd.

The more optimistic demand forecasts have supporters of oil and gas production on the prairies arguing that if there is going to be global demand until 2050 and beyond, Canada should be the supplier of choice. And, for good reason. The environmental regulations that govern oil and gas production in Canada are among the most stringent in the world. Moreover, Canada's oil export revenues, unlike Russia's, aren't used to finance a war of aggression and the bombing of children in Ukraine. Unlike Iranian oil, Canadian oil isn't subsidizing terrorists, or bankrolling the Maduro dictatorship in Venezuela.

Yet, the fact remains, despite having the third highest oil export revenues on the planet Canada hasn't been able to match Norway's success in reducing greenhouse gas emissions while at the same time expanding oil production. The two missing ingredients are recognition it needn't be a zero-sum proposition, coupled with the political will to overcome the entrenched positions of policy makers and key stakeholders.



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Annex

Estimates for the value of oil exports to international customers in countries other than the US if the Northern Gateway, Trans Mountain, and Energy East pipelines had been completed and operating at full capacity from 2015 to 2022.

YEAR	BRENT USD	WTI USD	WCS USD	DISCOUNT PB WTI-WCS USD	DISCOUNTPB AS %WTI	NG AT 520,000 BPD IN BILLIONS CAD	TM AT 590,000 BPD IN BILLIONS CAD	EE AT 428,000 BPD IN BILLIONS CAD	TOTAL BILLIONS CAD
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
2015	52.32	48.66	35.28	13.38	28.0	10.3	11.7	8.5	30.5
2016	43.67	43.24	29.48	13.81	32.0	8.86	10.0	7.2	26.1
2017	54.25	50.80	39.98	10.83	21.0	10.6	12.03	8.7	31.33
2018	71.34	65.23	38.46	26.77	41.0	14.06	15.94	11.54	41.54
2019	64.30	56.99	44.28	12.71	22.2	13.06	14.8	10.06	37.92
2020	41.96	39.68	26.81	12.87	31.0	8.6	9.7	7.1	25.4
2021	70.86	68.17	42.23	26.47	38.1	13.5	15.3	11.2	40.0
2022	100.93	94.53	76.01	18.52	19.6	20.1	22.7	16.48	59.3
Totals						98.99 BN	112.17	81.32	292.1
Avg.	73.73	71.24	53.22	17.35	26.3	12.37 BN	14.02	10.17	36.6

SOURCES: THE DATA EMPLOYED IN SUPPORT OF THE CALCULATIONS DESCRIBED IN THE TABLE WAS DERIVED FROM SEVERAL STATISTICS AGGREGATORS, INTERNATIONAL AND CANADIAN OIL AND GAS INDUSTRY ORGANIZATIONS AND STATISTICS PUBLISHED BY GOVERNMENT AGENCIES. DETAILS ARE AVAILABLE FROM THE AUTHOR.

Key: C2 Brent benchmark price, C3 West Texas Intermediate Crude benchmark price, C4 Western Canadian Select (dilbit), C5 per barrel US\$ value of the discount (aka differential) charged against WCS, C6 the differential/discount as a percentage of the WTI price. C7, C8, C9 these three columns assume that the Northern Gateway (NG), Trans Mountain (TM) and Energy East (EE) Pipelines are all completed and operating at maximum capacity. Any domestic consumption associated with each pipeline has been deducted from the capacity figures, the \$ values are based upon the Brent benchmark price less a differential/discount of 19.8% charged against WCS. This assumes the differential cost charged in the international marketplace will be lower than the average differentials charged in the US. The 19.8% the amount is employed for illustrative purposes, actual differential charges could depend on the distances involved in shipping dilbit by tanker to each respective international customer.

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